

## **Dissertations Initiative for the Advancement of Limnology and Oceanography: DIALOG V, VI and VII**

C. Susan Weiler  
Whitman College  
Walla Walla, WA 99362  
phone: (509)-527-5948 fax: (509) 527-5961 email: [weiler@whitman.edu](mailto:weiler@whitman.edu)

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<http://aslo.org/phd.html>

### **LONG TERM GOALS**

Research frontiers and important new breakthroughs increasingly are occurring at the intersection of traditional disciplines. The DIALOG goal is to catalyze such advances by bringing together researchers across the full spectrum of aquatic sciences -- freshwater and salt, basic and applied, from the molecular to global level.

Recent Ph.D. graduates are targeted so that benefits accrue over full professional lifetimes. This initiative facilitates interactions across departmental, institutional and national boundaries and moves science and society forward more quickly and creatively than would be possible otherwise

### **OBJECTIVES**

The DIALOG initiative is devoted to training the next generation of aquatic-science researchers. It provides new Ph.D. graduates with a breadth of understanding and an interdisciplinary, international collegial network on which they can build throughout their professional lifetimes.

The objective is to broaden the interdisciplinary understanding, facilitate development of successful interdisciplinary careers, and catalyze development of interdisciplinary, international collegial networks to expand research frontiers and further our understanding of aquatic systems.

DIALOG symposia reach graduates at a pivotal point in their careers, the transition from student to independent researcher. Based on their comments, the symposium changes the way the symposium scholars approach and communicate their research, interact with their students and colleagues, and contribute to institutional and community transformations.

### **APPROACH**

DIALOG uses three approaches: 1) **symposia** bring together a select cadre of interdisciplinary recent Ph.D. graduates with a focus on biology/ecology; **webpage** (<http://aslo.org/phd.html>) extend resources developed for and by symposium participants to a broad global audience; 3) **weekly electronic newsletter** disseminates resources, research news, job announcements and other time-sensitive materials.

In order to reach a broad global audience, scientific societies are invited to join the initiative as co-sponsors During this 4-year grant the number of societies increased by seven and now includes:

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American Fisheries Society (AFS), American Society of Limnology and Oceanography (ASLO), American Geophysical Union (AGU), Estuarine Research Federation (ERF), Ecological Society of America (ESA), International Association for Great Lakes Research (IAGLR), International Society of Limnology (SIL), Japanese Society of Limnology (JSL), North American Benthological Society (NABS), North American Lake Management Society (NALMS), Oceanography Society of Japan (OSJ), Phycological Society of America (PSA), Society of Canadian Limnologists (SCL), Western Society of Naturalists (WSN) and The Oceanography Society (TOS). Co-sponsoring scientific societies provide in-kind support by advertising the program through their publications, newsletters, and/or meetings.

- **Symposia:** DIALOG symposia bring together graduates with strong interdisciplinary interests and demonstrated potential for outstanding research careers. Participants are selected by a 6-member committee of established interdisciplinary research scientists based on an application package that includes: Ph.D. dissertation abstract; resume; two essays on interdisciplinary interests and career goals; and two letters of recommendation. After applications are read and evaluated by each member, the committee meets to discuss applications and make final recommendations.

The invited early-career researchers are brought together for one week at an isolated research venue with a retreat-style atmosphere, on-site housing, meals and meeting rooms. Symposium size has been limited to about 40 to enable all invitees to become well acquainted over a 1-week period. Program officers from the various funding agencies and one or two established research scientists also attend. They share insights and otherwise mentor the participants. Participants share their research in both oral and poster format, learn about the sponsoring agencies, discuss emerging research, societal and professional issues, and receive pointers on how to successfully conduct collaborative research.

- **Webpage:** A webpage, <http://aslo.org/phd.html>, serves as the portal to DIALOG and enables the global community to access resources. The site includes symposium information and application instructions, links to funding agencies and aquatic-science societies, newsletter archive, resources developed for and by symposium participants, and program reports. A Ph.D. Dissertation Registry, accessed from the webpage provides a unique introduction to the work of this most recent generation of aquatic scientists. Dissertation abstracts are submitted on line and immediately posted in a format that can be searched by year, name, institutions, country of PhD and key words. Information submitted when dissertations are registered and the results of surveys completed by symposium participants are compiled in a database and used to characterize the graduate population and to assess trends. Biennial reports are archived at <http://aslo.org/phd.html>. Those who register are signed up for the weekly electronic DIALOG Newsletter.

- **Electronic Newsletter:** Everyone who registers a dissertation is placed on an electronic distribution list to receive the weekly DIALOG Newsletter. This service disseminates research news, funding opportunities and other resources, job announcements, meeting announcements and a forum for discussion.

## WORK COMPLETED

### Symposia:

Two symposia were originally proposed and funded for the 4-year period of this grant (August 1, 2002 – July 31, 2006). Symposium participation has been limited to 40-43 to facilitate collegial interactions

and networking. Ultimately, three symposia (2003, 2004, 2005) were held to accommodate a growing number of high-quality applicants:

**DIALOG V Symposium:** October 19 – 25, 2003, Bermuda Biological Station for Research, St. George's, Bermuda

**DIALOG VI Symposium:** October 30 – November 6, 2004, Dauphin Island Sea Lab, Dauphin Island, AL

**DIALOG VII Symposium:** December 3 – 10, 2005, Dauphin Island Sea Lab, Dauphin Island, AL

#### **Webpage:**

During this grant, the DIALOG webpage at <http://aslo.org/phd.html> was reorganized and expanded. It now includes symposium information and application instructions, a registry of Ph.D. dissertation abstracts, resources developed for the symposium and reports.

Demographic information collected at the time graduates register their Ph.D. dissertation provides a profile of the newest entrants to the aquatic science community-- Ph.D.-granting institution, job history and status, disciplinary interests, gender, age at degree, ethnicity, citizenship, and other information of use to the academic research community.

#### **Electronic Newsletter:**

The newsletter has been expanded and reformatted to take advantage of new technologies.

## **RESULTS**

#### **Symposium:**

The number of applicants for biennial symposia increased from 67 for DIALOG I (1994) to 146 for DIALOG V (2003) (Table I). The quality of the applicants continues to be strong based on the publication records, letters of recommendation, and conclusions of the applicant review committees. The increase in applicants resulted in a decline in the applicant success rate from 64% to 30%. An extra symposium was accomplished in 2004 by moving to a more cost-effective location, raising new funds from outside sources and requiring some international participants to fund their own travel. Moving to an annual cycle for 2004 and 2005 reduced the number applying per symposium even though the total number of symposium applications continued to increase ( $97 + 77 = 173$ , compared with 146 for DIALOG V) and enabled the series to maintain a success rate of 44% – 55% of applicants.

A total of 299 scholars have participated in the seven DIALOG symposia. Citizens of 41 countries have been represented, with two thirds of symposium scholars completing their Ph.D. within the U.S. Since postdocs move frequently, it is difficult to track residency. Some of those who study abroad return to their home countries, while others stay or move to a different country. Each symposium has included citizens of eleven or more countries, including at least two from economically disadvantaged countries. The following countries were represented at the first seven symposia: U.S., Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Costa Rica, Denmark, Finland, Germany, Ghana, Greece, Iceland, India, N. Ireland, Israel, Italy, Japan, Jordan, Mexico, Nepal, Netherlands,

New Zealand, Norway, Poland, Russia, Singapore, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, Uruguay, Venezuela, and Zimbabwe.

Of the American symposium scholars, 52% are female, and 7.4% U.S. under-represented minorities. By comparison, NSF 1999 reports 4.9% under-represented minorities in Earth, atmospheric and marine science and 6.4% in hydrology, oceanography and marine science, ocean engineering and Fisheries science.

***Table I. Number of applications received for DIALOG Symposia.  
DIALOG V, VI and VII were supported by this grant.***

<b><i>DIALOG # PhDs completed</i></b>	<b><i>I 06/92- 09/94</i></b>	<b><i>II 10/94- 03/97</i></b>	<b><i>III 04/97- 03/99</i></b>	<b><i>IV 04/99- 12/00</i></b>	<b><i>V 01/01- 03/03</i></b>	<b><i>VI-VII 04/03- 04/05</i></b>
<b><i># Applied to Symposium</i></b>	<b><i>67</i></b>	<b><i>87</i></b>	<b><i>92</i></b>	<b><i>124</i></b>	<b><i>146</i></b>	<b><i>97 - VI 77 - VII</i></b>

The European Commission provided travel funds for 8-10 European invitees to previous symposia, but the proposal for DIALOG V funding by the EC was declined at the last moment leaving funding for only 34 of 44 slots. Fifty invitations were extended for the DIALOG V symposium because 7 declined: Two Americans had professional conflicts, one Brazilian was unable to obtain a visa and four Europeans were unable to secure transcontinental transportation funding. Additional funds were raised for DIALOG VI and VII. Forty-one invitations were extended for the DIALOG VI symposium and all accepted. Forty-four invitations were extended for the DIALOG VII symposium and all were accepted.

Participants continue to be enthusiastic about the symposium experience (see Table II). The rating on evaluations collected the end of each symposium consistently average 1.3 – 1.4 on a scale of 1 to 5 with 1 = Excellent. Participants are also asked to rate the individual symposium components and make recommendations on what to add, modify or delete. Changes to the agenda have been relatively minor and reflect participant recommendations:

1. Length of oral presentations has been reduced from 12 minutes to 8 minutes with talks concentrated on the first two days (previously talks were spread over 4 days) so that research interests of all are identified early in the symposium.
2. Poster sessions were moved from afternoons to evenings and refreshments added to provide a more informal atmosphere.
3. Facilitation and communication training was added to increase productivity of discussions.
4. A small number of established scientists are invited to serve as role models and mentors, and provide insights on career development.

**Table II. Results of 2002 Retrospective Survey of DIALOG I – IV participants (1993, 1997, 1999, 2001). Participants were asked to rate the overall symposium experience on a scale of 1 to 10 with 1 = not worthwhile and 10 = very worthwhile. Participants were also asked to indicate specific tangible outcomes resulting from the symposium. Results tally to more than 100% because some participants had more than one tangible outcome. Results are displayed for the American participants and for others. One hundred fifty nine of the 171 symposium participants (93%) responded to the survey. The response rate for the American participants was 100%. The response rate for citizens from other countries was 83%.**

<b>Symposium Evaluation 1 – 10 scale 1 = Not Worthwhile 10 = Very Worthwhile</b>	<b>Benefited from peer network</b>	<b>Scientific interests broadened</b>	<b>Proposal inspired by symposium experience (submitted)</b>	<b>Other activity inspired by symposium experience</b>	<b>Research collaboration with DIALOG colleague or referral</b>	<b>*Other collaboration with DIALOG colleague or referral</b>
<b>Americans: 9.1</b>	<b>77.2%</b>	<b>69.3%</b>	<b>43.6%</b>	<b>22.8%</b>	<b>24.8%</b>	<b>28.7%</b>
<b>Other: 9.0</b>	<b>72.9%</b>	<b>87.5%</b>	<b>45.8</b>	<b>37.5%</b>	<b>14.6%</b>	<b>29.2%</b>

**\*Other included: Ideas for improving on-going research projects, publication of a peer-reviewed article, exposure to colleagues from different institutions led to creative thinking about home institution; made more international connections than otherwise possible; developed perspective on science as a profession; perspectives of peers at 4-year colleges helped during first year as teacher; provided career direction and opportunities for research from a commercial business perspective.**

Graduates are increasingly working as part of large interdisciplinary teams yet few are provided with the tools necessary to do this effectively. The symposium has tried to make up for at least some of this deficit by providing some on-site training in communication and team-building skills to maximize effectiveness of the on-site discussions, and encouraging participants to act as seeds for change when they return to their home institutions.

**Webpage:** A webpage, <http://aslo.org/phd.html>, housed on the ASLO server is the portal to DIALOG. This site enables the global community to access resources. The site includes program information, links to funding agencies and aquatic-science societies, newsletter archive, resources developed for and by Symposium participants, and program reports. The DIALOG webpage is visited by a growing number of graduates from the US and abroad. According to statistics provided by ASLO Web Editor Paul Kemp, the site has been accessed over two million times during the past three years alone, a “remarkable achievement that should be viewed as proof that these programs are valuable public services. The typical visit to the DIALOG area of the ASLO website also lasts several times longer than is typical of most other areas. Clearly, the visitors are finding the content very interesting and worth spending time on” (personal correspondence, July 11, 2005).

Graduates may register their Ph.D. dissertation with DIALOG even though they do not wish to apply to the symposium, and many do (Table III). The number who register, and who apply for the symposia, has increased. During this grant, covering the DIALOG V, VI and VII symposia from January 2001 through March 2005, there were 801 abstracts submitted. Of those, 42% were American citizens, 52% completed Ph.D. degrees in the United States, 61% were oceanographers, 52% were female and 40% applied to a DIALOG symposium.

Detailed statistical reports are available at <http://aslo.org/phd.html>.

**Table III. Comparison of DIALOG I, II, III, IV, V and VI Programs.**  
*In some cases the Registrants did not provide all demographic information requested and so totals below do not always add up to the total for abstracts submitted.*

<b>DIALOG # PhDs completed</b>	<b>I 06/92- 09/94</b>	<b>II 10/94- 03/97</b>	<b>III 04/97- 03/99</b>	<b>IV 04/99- 12/00</b>	<b>V 01/01- 03/03</b>	<b>VI-VII 04/02- 03/05</b>
<b># Abstracts Submitted</b>	<b>80</b>	<b>98</b>	<b>166</b>	<b>221</b>	<b>447</b>	<b>354</b>
<b># Months of cycle</b>	<b>27 mo</b>	<b>31 mo</b>	<b>24 mo</b>	<b>21 mo</b>	<b>27 mo</b>	<b>24 mo</b>
<b>Amer. Citizens</b>	<b>42</b>	<b>37</b>	<b>78</b>	<b>81</b>	<b>188</b>	<b>150</b>
<b>Other Citizens</b>	<b>38</b>	<b>61</b>	<b>88</b>	<b>140</b>	<b>259</b>	<b>204</b>
<b>PhD Inst -USA</b>	<b>53</b>	<b>43</b>	<b>92</b>	<b>105</b>	<b>229</b>	<b>187</b>
<b>PhD Inst -Other</b>	<b>27</b>	<b>55</b>	<b>74</b>	<b>116</b>	<b>218</b>	<b>167</b>
<b>Limnologists</b>	<b>28</b>	<b>58</b>	<b>62</b>	<b>81</b>	<b>136</b>	<b>106</b>
<b>Oceanographers</b>	<b>52</b>	<b>40</b>	<b>104</b>	<b>140</b>	<b>277</b>	<b>214</b>
<b>Hydrol/Other</b>					<b>34</b>	<b>34</b>
<b>Male</b>	<b>52</b>	<b>47</b>	<b>97</b>	<b>129</b>	<b>248</b>	<b>170</b>
<b>Female</b>	<b>28</b>	<b>51</b>	<b>69</b>	<b>86</b>	<b>198</b>	<b>184</b>
<b># Applied to Symposium</b>	<b>67</b>	<b>87</b>	<b>92</b>	<b>124</b>	<b>146</b>	<b>97 - VI 77 - VII</b>

The 354 DIALOG VI-VII program registrants (Table II) included citizens of over 50 countries: United States (148), Argentina (4), Australia (8), Austria (2), Belarus (1), Belgium (3), Bhutan (1), Brazil (15), Bulgaria (1), Canada (25), Chile (1), China (8), Colombia (4), Czech Republic (1), Denmark (2), Ecuador (1), Finland (1), France (6), Germany (28), Ghana (1), Greece (5), Iceland (1), India (13), Indonesia (2), Iran (1), Ireland (2), Israel (2), Italy (3), Japan (6), Korea (3), Maldives (1), Mexico (6), Nepal (2), Netherlands (7), New Zealand (1), Nicaragua (1), Nigeria (1), Norway (1), Peru (1), Poland (2), Portugal (1), Romania (2), Singapore (1), Slovenia (1), South Africa (1), Spain (8), Sweden (5), Switzerland (2), Turkey (1) and United Kingdom (3). Dual citizenship registrants included United States/Canada (1), United States/New Zealand (1), Austria/Canada (1), Canada/United Kingdom (1), Israel/Russia (1), Kenya/Canada (1) and South Africa/Sweden (1).

**Newsletter:** More than 1,200 graduates are currently subscribed to the weekly electronic newsletter. A survey was sent to newsletter subscribers in 2006. Ninety seven responded within two weeks of the request. Overall rating of the newsletter was 1.8 on a scale of 1 to 5 with 1 = Excellent and 5=Poor. All sections of the newsletter were rated highly.

No more than three changes were requested for any one section: (Table IV).

**Table IV. Evaluations of DIALOG webpage and electronic newsletter.**

*Graduates who had registered with the DIALOG program but had not participated in any of the symposia were asked to respond to a questionnaire about the <http://aslo.org/phd.html> website and weekly electronic newsletter. A total of 97 responses were received (XXXX response rate). The questionnaire requested an evaluation of the website and newsletter on a scale of 1 to 5 with 1 = Excellent. Graduates were also asked to indicate most useful features and suggest items for improvement. Results are summarized below.*

<b>Average rating</b>	<b>Most Useful</b>	<b>Suggestions for improvement</b>
<b>Webpage: 1.8</b>		
<b>Newsletter: 1.8</b>	<b>Jobs</b> 30 <b>Research news</b> 25 <b>Resources</b> 12 <b>All</b> 8 <b>Conferences</b> 6 <b>Funding info</b> 5 <b>Training/courses</b> 4	<b>More early-career resources</b> 3 <b>More international coverage</b> 3 <b>More job listings</b> 2 <b>Shorten</b> 2 <b>More conference listings</b> 1 <b>More aquatic content</b> 1 <b>More research summaries</b> 1 <b>More about alternate careers</b> 1

## IMPACT/APPLICATIONS

Based on symposium evaluations and survey results, DIALOG has been successful in achieving its goals. By facilitating the development of close collegial ties, symposium participants come away with a network of colleagues from around the globe with interests in aquatic science research and education. Past participants are collaborating on research proposals, and all have noted that participation has enabled them to develop a more interdisciplinary view of their field, influencing the way they interpret, communicate, and approach their research.

During the 12+ years of this program, the distinction between basic and applied research, which has always been fuzzy, is becoming ever more blurred. Proportionately more graduates are working on applied research questions, publishing before graduation, and working as part of an interdisciplinary team as graduate students. Based on input received at the symposia, more graduates are interested in interdisciplinary questions and communicating beyond the ivory towers. To best serve the recent grads and society, which depends heavily on the work of these new professionals, the symposia will continue to evolve to meet changing conditions, professional and societal needs.

## TRANSITIONS

N/A

## RELATED PROJECTS

The PI is involved in two related projects funded by NSF: DISCCRS (Dissertations Initiative for the Advancement of Climate-Change Research) and NGPR, (New Generation of Polar Researchers), a symposium to bring together early-career scientists who will conduct research during the upcoming International Polar Year (IPY).



## PUBLICATIONS

### Journal Publications:

Graham, W.M. 2003. Navigating promotion and tenure: Strategies for the newly employed. *L&O Bulletin* 12(4): 85-86. <http://aslo.org/phd/tenuretips.pdf>

Weiler, C.S. 2005. The Right Stuff: Preparing PhD graduates for the challenges posed by complex environmental systems. *L&O Bulletin* 14(1): 47-48.

Wilson, K. and S.E. Hampton, 2004. Ecology teaching tips for first-year professors. *Bulletin of the Ecological Society of America* 85 (2): April, 2004. <http://www.aslo.org/phd/teachingtips.pdf>.

### Book(s) or other one-time publications(s):

Campbell, R.W., M. Boersma, J. Dower, G. Muller-Parker and C.S. Weiler. 2005. In pursuit of the perfect letter of reference. [http://marcus.whitman.edu/~weilercs/Recommendation Letters/](http://marcus.whitman.edu/~weilercs/Recommendation%20Letters/)

Campbell, R.W., M.C. Horner-Devine, J. Lartigue and G.C. Rollwagen Bollens. 2005. Preparing for an academic job interview: Compilation of frequently asked questions. <http://www.aslo.org/phd/interviewhints.pdf>

Keine, R. and D. Kieber, 2002. Model for a collaborative research proposal. <http://aslo.org/phd/modelproposal.pdf><http://www.dialog.741.com/>

Weiler, C.S. 2005. DIALOG VI and VII: Dissertation Initiative for the Advancement of Limnology and Oceanography. Program Report with citations of PhD recipients registering with DIALOG between May 1, 2003 and April 30, 2005. Whitman College. 40 pp.

Weiler, C.S. 2004. Meeting the needs of interdisciplinary Ph.D. graduates in a changing global environment. Report from an October, 2003 workshop. Whitman College, 20 pp. <http://marcus.whitman.edu/~weilercs/biocomplexity/>

Weiler, C.S., S. Cook and L. Duguay. 2006. Organized session for AGU/ASLO/TOS Ocean Sciences Meeting, The Right Stuff: Graduate and post-graduate training for interdisciplinary Research careers. <http://marcus.whitman.edu/~weilercs/resources/OceanSciences2006/index.html>.

Weiler, C.S. 2004. Resources for scientific presentations recommended by DIALOG and DISCCRS participants. <http://marcus.whitman.edu/~weilercs/TalkingTips/>

### Other Specific Products:

Campbell, R.W., M.C. Horner-Devine, J. Lartigue and G.C. Rollwagen Bollens. 2005. Preparing for an academic job interview: Compilation of frequently asked questions. <http://www.aslo.org/phd/interviewhints.pdf>

Campbell, R.W., M. Boersma, J. Dower, G. Muller-Parker and C.S. Weiler. 2005. In pursuit of the perfect letter of reference. [http://marcus.whitman.edu/~weilercs/Recommendation Letters/](http://marcus.whitman.edu/~weilercs/Recommendation%20Letters/)

Etheridge, S. et al. 2004. DIALOG V educational slides: Interdisciplinary topics in aquatic science.  
<http://www.dialog.741.com/>

Weiler, C.S. 2004. Resources for scientific presentations recommended by DIALOG and DISCCRS participants. <http://marcus.whitman.edu/~weilercs/TalkingTips/>

Weiler, C.S. 2006. What Ph.D. graduates want: Strategies for building successful interdisciplinary careers. Oral Presentation, AGU/ASLO/TOS Ocean Science Meeting  
<http://marcus.whitman.edu/~weilercs/resources/OceanSciences2006/index.html>

**Internet Dissemination:**

<http://aslo.org/phd.html>